

Taxonomic Notes on *Ophiopogon* of South Asia VI

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Ophiopogon chingii F.T.Wang & Ts.Tang, *O. hainanensis* Masam., *O. platyphyllus* Merr. & Chun and *O. latifolius* L.Rodr. are taxonomically reinvestigated. *Ophiopogon chingii* var. *glaucifolius* F.T.Wang & L.K.Dai is not clearly demarcated from var. *chingii*. This species is exceedingly variable, occurring in China and Vietnam. Some specimens from Vietnam formerly recorded by Rodriguez (1934) as *O. reptans* Hook.f. are identified here as *O. chingii*. *Ophiopogon reptans* recorded from Hainan Island (China) is also highly likely to be *O. chingii*. *Ophiopogon hainanensis* is regarded as conspecific with *O. chingii*. *Ophiopogon chingii*, *O. platyphyllus* and *O. latifolius* differ at least in the apical form of the ovary.
(Continued from J. Jpn. Bot 75: 69–79)

Key words: *Ophiopogon chingii*, *Ophiopogon hainanensis*, *Ophiopogon latifolius*, *Ophiopogon platyphyllus*, taxonomy

(11) *Ophiopogon chingii* and *O. hainanensis*

Ophiopogon chingii was described by Wang and Tang (1937) from Guangxi, China. Later, var. *glaucifolius* was distinguished under this species (Dai and Chen 1978). Currently, var. *glaucifolius* is recorded from Guangdong, Guangxi and Sichuan (Dai and Chen 1978, Zeng 1991), and var. *chingii* from Hainan, Guangdong, Guangxi, Yunnan, Sichuan and Guizhou (Dai and Chen 1978, Zeng 1991). The present survey confirmed that this species, including the form corresponding to var. *glaucifolius*, occurs not only in China but also in Vietnam.

The typical forms of the two varieties of *Ophiopogon chingii* look quite distinct from each other (Figs. 1, 2), and many of the specimens available are actually assignable to either variety: e.g. specimens such as Tsang 22431 (Guangxi, P), 27171 (Tonkin,

E, P), 29181 (Tonkin, E, P), Clements 4308 (Annam, K), Poilane 7029 (Annam, P) and Balansa 4155 (Fig. 1), 4155-bis (both from Tonkin, K) are assigned to var. *chingii*, while specimens such as Tsang 22479 (type locality of var. *glaucifolius* in Guangxi, P; Fig. 2), 27262 (Tonkin, P), 27338 (Tonkin, E, P) and 30407 (Tonkin, C, P) are assigned to var. *glaucifolius*. However, the gap between the two varieties is rather indistinct.

Dai and Chen (1978) described var. *chingii* as having roots always more or less ligneous and somewhat stiff, leaves 2.5–8 mm wide, perianth lobes about 5 mm long and pedicels 6–9 mm long. According to them, var. *glaucifolius* is distinguishable from var. *chingii* by having ligneous stiff roots 3–4 mm in diameter, generally wider leaves 0.5–2 cm wide, and pedicels nearly twice longer than perianths. However, most of these diagnostic characters overlap in the range of variation between the two varieties.



Fig. 1. A form of *Ophiopogon chingii* from northern Vietnam (B.Balansa 4155, K).
This form corresponds to var. *chingii*.

Actually, in the specimens at hand, any of these characters is rather continuous in

variation; viz. the roots vary continuously from 0.8 to 3.5 mm in diameter, stiffness of

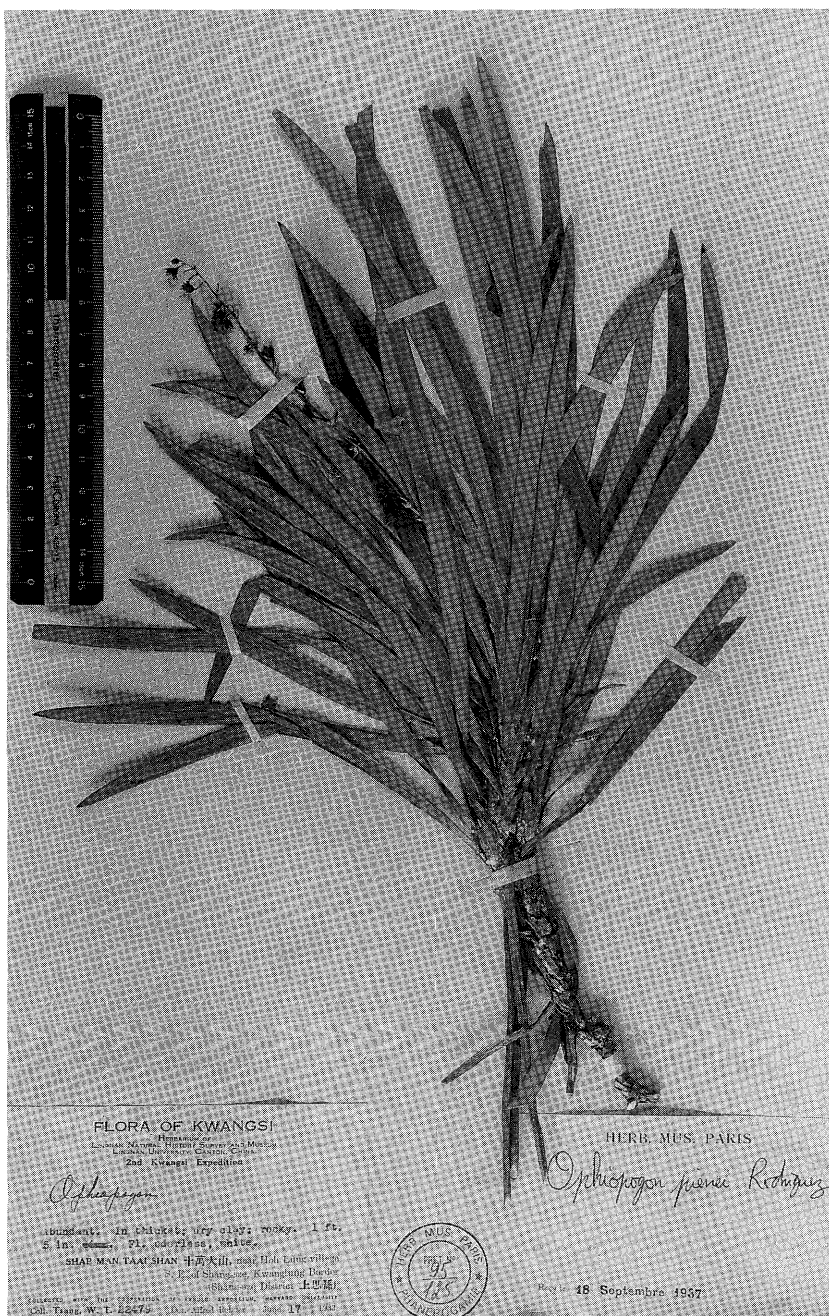


Fig. 2. A form of *Ophiopogon chingii* from southern China (type locality of var. *glaucifolius* in Guangxi, W.T.Tsang 22479, P). This form corresponds to var. *glaucifolius*.

the root increases as its thickness increases,
the leaves vary continuously from 2.5 to 21

mm in width, and the proportion in length of the pedicel to the tepal (perianth lobe) (ab-

breviated here as **P/T**) varies from 0.8 to 2.3.

The leaves of the specimens assignable to var. *chingii* tend to be arranged consecutively along the stem (Fig. 1), while those of the specimens assignable to var. *glaucifolius* tend to be fasciculate on the apical part of the stem (Fig. 2). However, there are some specimens showing the consecutive leaf arrangement, despite the fact that they are consistent with var. *glaucifolius* in other respects; e.g. in Morse 184 (2 sheets in fruit from Guangxi, K), leaves are arranged consecutively along the stem, to 9.7 mm wide, prop roots stiff and thick, to 3.5 mm in diameter, persistent (but withering) tepals 5.6–5.8 mm long, and pedicels to 13 mm long ($P/T = \text{ca. } 2.2\text{--}2.3$). Further, there are also some specimens showing the intermediate leaf arrangement between the two (e.g., Tsang 27171, E, P). Therefore, even by the leaf arrangement pattern we cannot clearly demarcate the two varieties. From all these observations, the two varieties seem not to be clearly delimited.

Ophiopogon chingii var. *chingii* is reported to occur on Hainan Island (southern China), (Dai and Chen 1978). Meanwhile, Masamune (1939) described *O. hainanensis* from this island. Masamune's description of *O. hainanensis* agrees quite well with a form of *O. chingii* (corresponding to var. *chingii*). In Flora Hainanica (1977), however, *O. chingii* is not recorded, and *O. hainanensis* is treated as a synonym of *O. platyphyllus* (for this species see chapter 12). The following passage in the protologue of *O. hainanensis*, “..vaginis saepe cristatis; ..antherae 2 mm longae”, seems to conform to *O. chingii* [see also Dai and Chen (1978) for the description of *O. chingii*] rather than to *O. platyphyllus*, since in the latter species the leaf vagina is not cristate (or not rugulose) and the anthers are more than ca. 3.3 mm long. As far as the original description is surveyed, it is highly likely that *O. hainanensis* is conspecific with *O. chingii*.

In Flora Hainanica (1977; abbreviated hereafter as ‘**FH**’), *Ophiopogon reptans* Hook.f. is recorded. This species is recorded from eastern India and Myanmar (Tanaka 1999). In general appearance *O. reptans* closely resembles a form of *O. chingii* (var. *chingii*). *Ophiopogon chingii* is not recorded in FH, but its occurrence on Hainan Island is recorded in Iconographia Cormophytorum Sinicorum, vol. 5 (1976), and by Dai and Chen (1978, as var. *chingii*). In the description of *O. reptans* in FH, there are some points inconsistent with *O. reptans* of Hooker. For instance, in FH it is described that the leaves of *O. reptans* are somewhat obtuse at the apex, the bracts are usually shorter than the pedicels at anthesis, and the pedicels are 5–8 mm long. These features agree with *O. chingii* [cf. also Anonymous (1976) and Dai and Chen (1978) for *O. chingii*] rather than with *O. reptans* of Hooker, since in the latter species the leaves are acute, the bracts are usually longer than the pedicels, and the pedicels are 1.8–3.5 mm long at anthesis (to 5.5 mm long in the fruiting stage; cf. Tanaka 1999). Therefore, it seems highly likely that *O. reptans* in FH is *O. chingii*.

Rodriguez (1934) recorded *Ophiopogon reptans* from Vietnam. I examined some specimens [Balansa 4155 (Fig. 1), 4155-bis, both P; Poilane 7029, P] formerly identified as *O. reptans* by him. These are no doubt a form of *O. chingii* (var. *chingii*). I have never seen a specimen of true *O. reptans* (of Hooker) from Vietnam.

As mentioned earlier, *Ophiopogon reptans* and a form of *O. chingii* (var. *chingii*) resemble each other, but actually these two species differ in several respects. One notable difference is that in *O. reptans* the leaves are tufted at intervals on the stem (Tanaka 1999), while in the form of *O. chingii* (var. *chingii*) the leaves tend to be arranged consecutively along the stem (Fig. 1).

Ophiopogon stenophyllus (Merr.) L.Rodr.

described from Guangdong bears some resemblance with *O. chingii*, but the anthers of the former are coherent (e.g. Hance 10086, K) (Anonymous 1976, Dai and Chen 1978), while those of the latter are separate.

The ovary of *Ophiopogon chingii* is slightly inflated at the apex as illustrated in Fig. 6A, but the degree of the inflation appears to be slightly weaker than in *O. pierrei* L.Rodr.; in the latter the same part is nearly dome-shaped (Tanaka 2000).

Ophiopogon chingii F.T.Wang & Ts.Tang in Bull. Fan Mem. Inst. Biol. 7: 282 (1937); Anonym., Icon. Corm. Sin. 5: 526, f.7881 (1976); L.K.Dai and S.C.Chen [see Chen et al. (1993), for authorship] in F.T.Wang and Ts.Tang, Fl. Reipub. Pop. Sin. 15: 146, t.48, f.1,2 (1978); W.Z.Zeng in J.M.Xu, Fl. Sichuan. 7: 308, t.103, f.1–3 (1991). [Figs. 1, 2, 6A]

O. reptans auct. non Hook.f.: L.Rodr. in Lecomte, Fl. Indo-Chine 6: 660 (1934), saltem quoad specim. Poilane & Balansa; Anonym., Fl. Hainan. 4: 110 (1977).

O. hainanensis Masam. in Trans. Nat. Hist. Soc. Formosa 29: 28 (1939); Fl. Kainan. 404 (1943); syn. nov.

O. chingii F.T.Wang & Ts.Tang var. *glaucofolius* F.T.Wang & L.K.Dai in L.K.Dai and S.C.Chen in F.T.Wang and Ts.Tang, Fl. Reipub. Pop. Sin. 15: 146 (sine descr. Latin.), t.49, f. 1,2, p.252 (1978); W.Z.Zeng in J.M.Xu, Fl. Sichuan. 7: 309 (1991); syn. nov.

Glabrous perennial herb. Stem decumbent to semi-erect, to more than 43 cm long, to ca.6 mm in diameter, occasionally branched, emitting prop roots to ca.3.5 mm in diameter. Leaves fasciculate on apex of stem or borne all along stem, acute or obtuse at apex, tapering to base which is vaginate with broad, scarious and often transversely rugulose wings, glaucous on abaxial surface, 5–21-veined (veins often indistinct), 7–28 cm long, 2.5–21 mm wide. Scape complanate, more or

less declinate, to ca.23 cm long. Inflorescence racemose. Pedicels (incl. basal stalky part of perianth) 3.5–9.5 mm long (to 13 mm long in fruit), jointed usually around middle (articulation site variable). Bracts ovate to lanceolate, acute, acuminate or caudate, scarious, entire, usually shorter than pedicels, to ca.9 mm long (rarely to 16 mm long). Flowers secund, cernuous, 1–3 in axils of bracts. Perianth lobes 6, ovate-oblong, 4.3–5.8 mm long, 1.5–2.1 mm wide. Stamens 6. Anthers lanceolate, 2.3–3.5 mm long. Filaments very short, free. Pistil 1. Style subulate, 3–5 mm long. Ovary slightly convex at apex. Seeds globular to ellipsoidal.

Distribution: Vietnam and SW China.

Representative specimens examined:

Vietnam. Annam, Bana, prés Tourane, Jul. 10, 1923, fl., Poilane 7029 (P); Tourane, May–Jul. 1927, J. & M.S.Clements 4308 (K); Tonkin, Tu-phap, Jun. 1887, fl., B.Balansa 4155 (K); ibid., Jan. 1887, fr., B.Balansa 4155-bis (K); Tonkin, Taai Wong Mo Shan and vicinity, Chuk-phai, Hacoï, Nov. 18–Dec. 2, 1936, fr., W.T.Tsang 27262 (E, P); ibid., Nov. 1–9, 1936, fr., W.T.Tsang 27171 (E, P); ibid., fl. white, fragrant, May 3–Jun. 22, 1939, fl., W.T.Tsang 29181 (E, P); Taai Wong Mo Shan and vicinity, Shui Mei village, NE of Chuk-phai, Hacoï, fl. white, fragrant, Jun. 23–Aug. 31, 1939, fl., W.T.Tsang 29409 (E, P); Sai Wong Mo Shan, Lomg Ngong village, Dam-ha, Jul. 18–Sept. 9, 1940, (late) fl., W.T.Tsang 30407 (C, K, L, P); Ouonbi, Nov. 1885, fr., B.Balansa 274 (K); Kau Nga Shan and vicinity, Tien-yen, Dec. 13–22, 1936, fr., W.T.Tsang 27338 (E, P).

China. Guangxi (Kwangsi), Shap Man Taai Shan, near Hoh Lung village, SE of Shang-sze, Kwangtung border (Shang-sze Distr.), fl. odorless, white, Jun. 17, 1933, fl., W.T.Tsang 22479 (P); ibid., Apr. 18, 1933, fr., W.T.Tsang 22135 (P); Shap Man Taai Shan, near Iu Shan village, SE of Shang-sze, fl. white, May 19, 1933, fl. (bud), W.T.Tsang 22330 (K); Shap Man Taai Shan, near Iu Shan village, SE of Shang-sze, fl. light blue, Jun. 2–7, 1933, fl. W.T.Tsang 22431 (P); Guangxi, Lungchow, south hill, Feb., fr., H.B.Morse 184 (K); Guangxi, Laohutiao, Napo Pref., ca.1000 m, Oct. 20, 1997, H. Akiyama et al. 1652 (MAK); Guangxi, Pingmen, Napo Pref., 800–1000 m, Oct. 17, 1997, fr., H. Akiyama et al. 135 (MAK).

Ohiopogon stenophyllus quoted in the text:

China. Guangdong (Prov. Cantonensis), West River, 1872, fl., Hance 10086 (K).

(12) *Ophiopogon platyphyllus**Ophiopogon platyphyllus* was described

by Merrill and Chun (1935) from Hainan Island, southern China. In general appear-

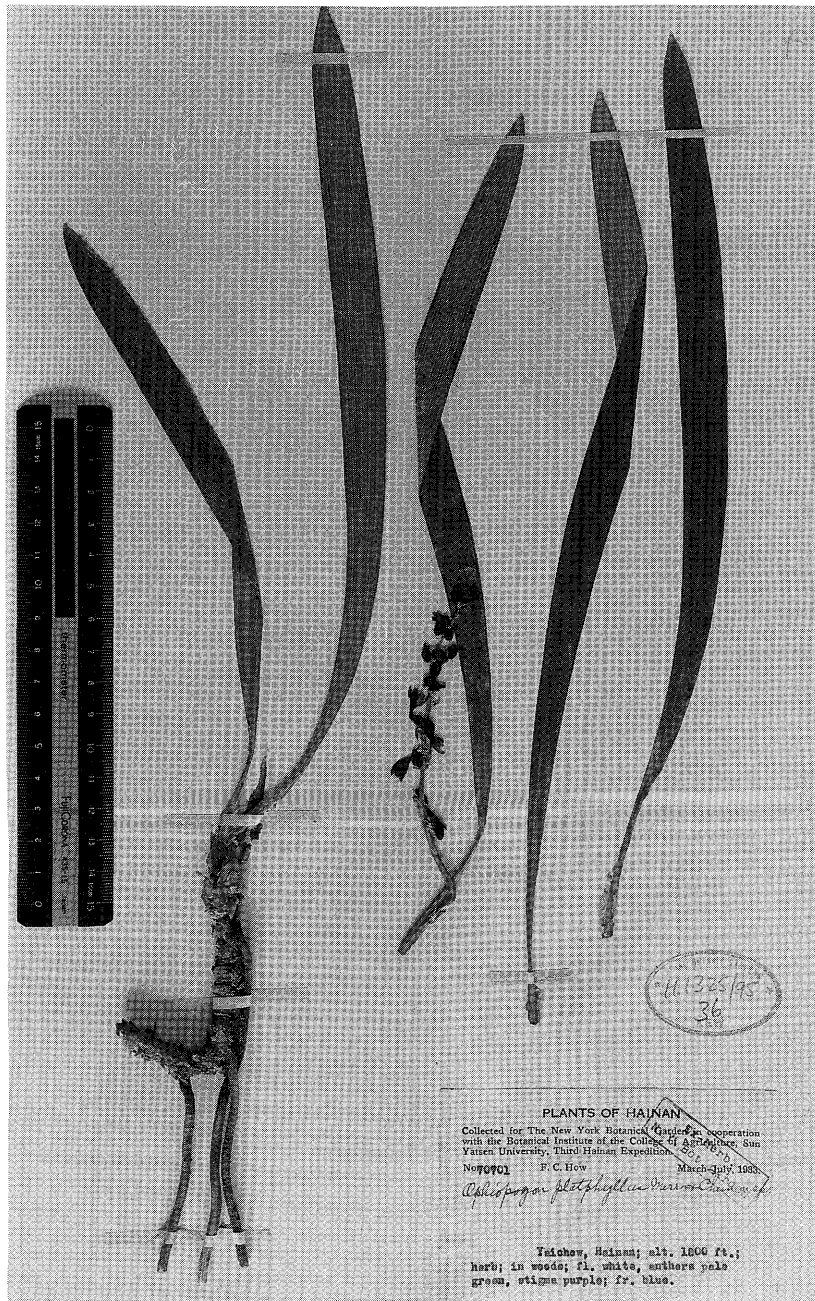


Fig. 3. *Ophiopogon platyphyllus* from Hainan Island (S China, F.C.How 70701, K). The collector and collection number of this specimen, F.C.How 70701, coincides with that of the type of this species, but the exact locality within the island differs between the type and this specimen.

ance this species (Fig. 3) closely resembles the wide-leaf form of *O. chingii* (corresponding to var. *glaucofolius*) (e.g., Tsang 27262, P). But, they differ at least in the following floral character; in *O. platyphyllus* the central part of the apex of the ovary is concave as illustrated in Fig. 6B, while in *O. chingii* the same part is slightly inflated (or convex) above (Fig. 6A). On the other hand, the narrow-leaf form of *O. platyphyllus* (McClure 9334, K) much resembles *O. stenophyllus* (Merr.) L.Rodr. described from Guangdong, China. But, these two species differ also in the apical form of the ovary; viz. in *O. stenophyllus* the same part is inflated above (e.g., Hance 10086, K; Merrill 10757, L) somewhat like that in *O. chingii* (Fig. 6A), while in *O. platyphyllus* it is concave (Fig. 6B), as stated above. Further, the anthers of *O. stenophyllus* are coherent laterally (Hance 10086, K), while those of *O. platyphyllus* are free. *Ophiopogon platyphyllus* also resembles *O. caulescens*. But in *O. platyphyllus* the filaments are separate, while in *O. caulescens* they are more or less united laterally (Tanaka 2000).

***Ophiopogon platyphyllus* Merr. & Chun** in J. Bot. Inst. Col. Agr. Sun Yatsen Univ. 2: 211, t.38 (1935); Anonym., Fl. Hainan. 4: 110 (1977), p.p., excl. syn. *O. hainanensis*; L.K.Dai and S.C.Chen [cf. Chen et al. (1993) for authorship] in F.T.Wang and Ts.Tang, Fl. Reipub. Pop. Sin. 15: 146, t.49, f.5–7 (1978), excl. syn. *O. hainanensis*.

[Figs. 3, 6B]

Peliosanthes stenophyllus auct. non Merr. [in Philip. J. Sci. Bot. 13: 134 (1918)]: Merr. in Lingnan Sci. J. 5: 47 (1927).

Ophiopogon stenophyllus auct. non (Merr.) L.Rodr. [in Bull. Mus. Hist. Nat. Paris ser. 2, 6: 95 (1934)]: L.Rodr. in Lecomte, Fl. Indo-Chine 6: 663 (1934), quoad specim. McClure 9334.

Glabrous perennial herb. Stem to more than 9 cm, up to 8 mm in diameter, emitting

prop roots to 3 mm in diameter. Leaves tufted on apical part of stem, linear or broadly linear, acute or obtuse at apex, attenuate to base which is vaginate with scarious wings, striate on abaxial surface, to 19-veined, to 30 cm long, to 15.5 mm wide. Scape complanate, declinate, to 11.5 cm long. Inflorescence racemose. Pedicels (incl. basal stalky part of perianth) to 9.5 mm long (true pedicels excl. perianth part to 3.5 mm long), articulate in lower part. Bracts entire, scarious at margin. Flowers secund, cernuous, 1–3 in axils of bracts. Perianth lobes 6, lanceolate, ca.5.3–6.5 mm long, 1.6–2.2 mm wide. Stamens 6. Anthers lanceolate, 3.3–4 mm long. Pistil 1. Style subulate, 5.2–5.5 mm long. Ovary inferior, concave at apex.

Distribution: China (Hainan and Guangdong).

Specimens examined:

China. Hainan, Yaichow, 1800 ft, fl. white, anthers pale green, fruits blue, Mar.–Jul. 1933, fl., F.C.How 70701 (K); Hainan, Five Finger Mt., fls. light blue, lavender and white, frs., blue, Apr. 23, 1922, fl., F.A.McClure 9334 (K).

Ophiopogon stenophyllus quoted in the text:

China. Guangdong, West River, 1872, fl., Hance 10086 (K); Guangdong, Loh Fau Mountain (Lofaushan), Merrill 10757 (fragment of **type specimen of *Peliosanthes stenophylla* Merr., L.**).

(13) *Ophiopogon latifolius*

Ophiopogon latifolius was described by Rodriguez (1928) from northern Vietnam. In general appearance this species (Figs. 4, 5) resembles *O. chingii* (cf. chapter 11), *O. platyphyllus* (cf. chapter 12) and *O. caulescens* (Tanaka 2000). But, *O. latifolius* is distinguishable from them by the relatively long inflorescence with many flowers, the pedicels articulate near the apex, and the ovary which is rather flat at the apex as illustrated in Fig. 6C. In *O. chingii* the apical part of the ovary is slightly inflated above (Fig. 6A), while in *O. platyphyllus* (Fig. 6B) and *O. caulescens* (Tanaka 2000–Figs. 6A, 6B) the same part is concave. The filaments of *O.*

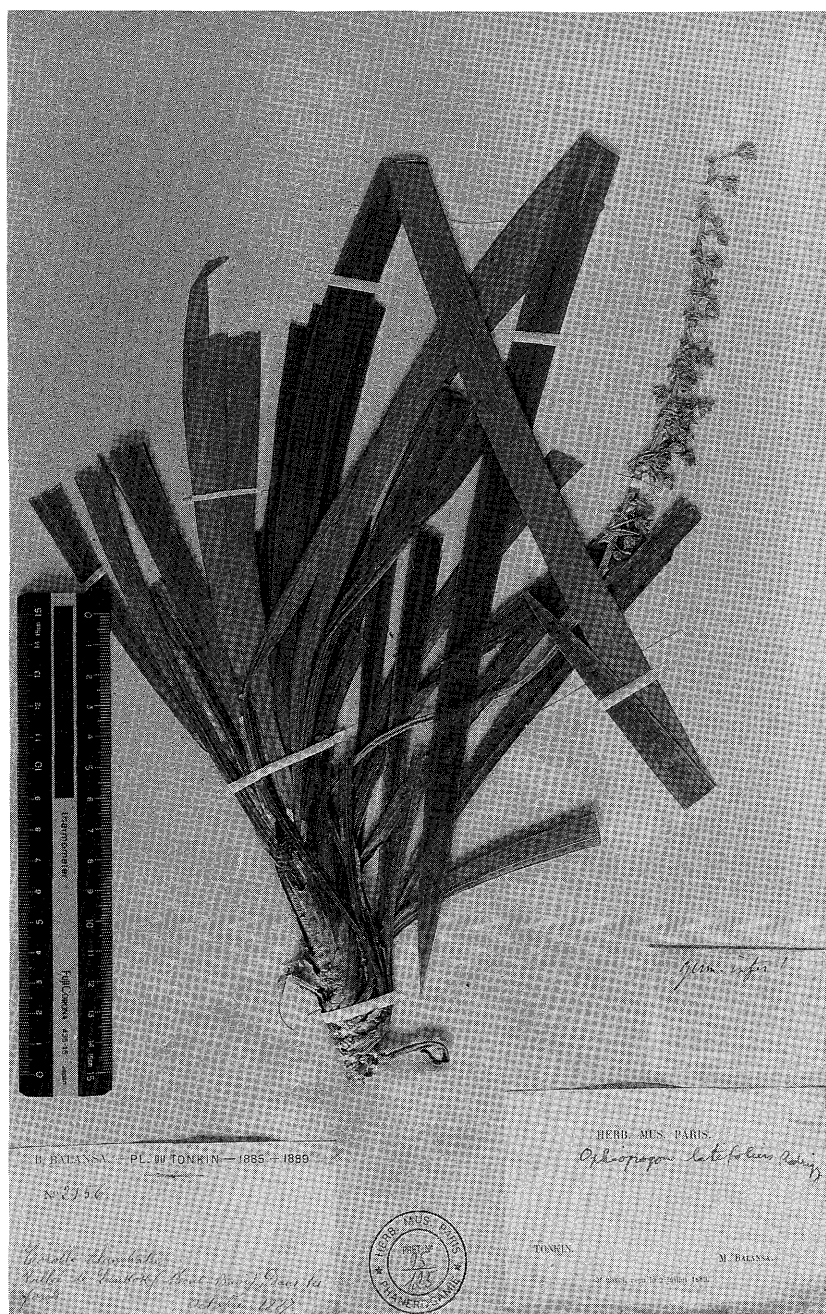


Fig. 4. Type specimen of *Ophiopogon latifolius* (N Vietnam, B.Balansa 2156, P).

latifolius are separate, while in *O. caulescens* they are more or less united laterally (Tanaka 2000). *Ophiopogon multiflorus* Y.Wan de-

scribed from Guangxi, China, also somewhat resembles *O. latifolius*, but the anthers of the former are coherent (Wan 1988), while those

of the latter are free.



Fig. 5. Close-up of a part of the inflorescence of *Ophiopogon latifolius* (N Vietnam, B.Balansa 2156, type, P). Pedicels are articulate near the apex (indicated by the arrow).

Ophiopogon latifolius L.Rodr. in Bull. Soc. Bot. Fr. **75**: 998 (1928); in Lecomte, Fl. Indo-Chine **6**: 660 (1934). [Figs. 4, 5, 6C]

Glabrous perennial herb. Root stiff, 2.3 mm in diameter. Leaves many, tufted on apical part of stem broadly linear, acute, attenuate to base which is vaginate with scarious wings, to 58.5 cm long, to ca.1.5 cm wide, veins ca.22 incl. rather indistinct ones, midrib prominent beneath. Scape ca.32 cm long, complanate. Inflorescence racemose, 16.5 cm long. Flowers secund, many, 2–6 in axils of bracts. Pedicels (incl. basal stalky part of perianth) 7.5–10 mm long (true pedicels excl. perianth part 6.7–9 mm long), thin, jointed near apex. Bracts lanceolate, acute to acuminate, scarious at margin, to 1.6 cm long. Perianth lobes 6, ovate-lanceolate, 4–5 mm long, 2–2.4 mm wide. Stamens 6, free. Anthers ovate-lanceolate, 2.7–2.8 mm long, 1.4–1.5 mm wide at base. Filaments very short, 0.3–0.4 mm long. Pistil 1. Style subulate, 4.5–5 mm long. Ovary inferior, rather flat at apex.

Distribution: N Vietnam. Also recorded from SW China (SE Yunnan) by Dai and Chen (1978).

Specimen examined:

Vietnam. Tonkin. Vallée de Lankok, Mont. Bavi, Oct. 1887, fl., B.Balansa 2156 (type, P).

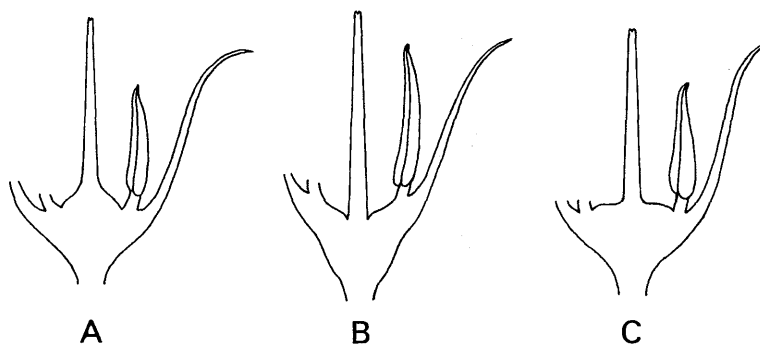


Fig. 6. Diagrammatic sketches of the floral structure of three species of *Ophiopogon* (lateral view). A. *O. chingii*. B. *O. platyphyllus*. C. *O. latifolius*.

I express my sincere thanks to the curators of the following herbaria for the loan of specimens; C, E, K, L and P. Warm thanks are also extended to Professor Jin Murata of Tokyo Metropolitan University (now at the University of Tokyo) for access to the specimens (MAK) collected by the team of Sino-Japanese botanical expedition to Yunnan and Guangxi in 1997.

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- See also those cited in the text.

田中教之：南アジア産ジャノヒゲ属の分類学的検討 VI

ジャノヒゲ属の4種 (*Ophiopogon chingii*, *O. hainanensis*, *O. platyphyllus*, *O. latifolius*) について検討した。*O. chingii* には2変種, var. *glaucifolius* と var. *chingii*, があるが, 変種間の境界が不明瞭なことから, これらの変種を分類群として区別せずに扱った。*O. chingii* は変異が大変幅広い種であり, 変異の極端型を比べるとそれらは別種のように見えるが, 変異は概して連続する。*O. hainanensis* は中国の海南島から記載された種であるが, その原記載は *O. chingii* の一型 (var. *chingii* に相当する) とよく一致することから, *O. hainanensis* を *O. chingii* と同種として扱った。また, 同じ海南島から, インド東部とミャンマーから知られている *O. reptans* が記録されているが,

これもその記載 (海南植物志第4巻, 1977) から判断すると, *O. chingii* の一型 (var. *chingii* に相当) と一致する。ベトナムからも *O. reptans* が Rodriguez (1934) によって記録されているが, 彼が引用している標本の少なくともいくつかは, 今回筆者が検したところ, *O. chingii* の一型 (var. *chingii* に相当) であった。*O. chingii* のベトナムにおける分布は本報告が初めての記録となる。*O. chingii*, *O. platyphyllus*, *O. latifolius* の3種は子房上部 (もしくは花柱下部) の形態 (cf. 図6) 等において差異が見られた。これらの種と類似性が高い種 (*O. caulescens* など) との相違点についても触れた。
(帝京大学文学部教育学科)